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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/806.786

03/23/2004

Kcith A. Novak

220-319 // TEL0705

2375

832

7590

10/13/2006

BAKER & DANIELS LLP
111 E. WAYNE STREET
SUITE 800
FORT WAYNE, IN 46802

EXAMINER

CHANG, CHING

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/806,786

Applicant(s)

NOVAK, KEITH A.

Examiner

Ching Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 2,9,10,16,19 and 21-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,11-15,17,18 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 03/23/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date, _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the Applicant's election of Group I and the species of Figs. 2-3, and 5A without traverse, filed on 09/25/2006, claims 1, 3-8, 11-15, 17-18, and 20 being readable thereon. Claims 2, 9-10, 16, 19, and 21-25 are withdrawn from consideration as being directed to the non-elected species and Group II.

Claim Objections

1. Claims 15, and 20 are objected to because of the following informalities:
 - "vent pressure said " in claim 15 should be -- vent pressure from said --.
 - "vent said " in claim 20 should be -- vent pressure from said --.

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. ***Claims 1, and 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikuma et al. (US Patent 6,250,271) in view of Walters (US Patent 6,474,281).***

Ikuma discloses an internal combustion engine, comprising: an engine housing (2); a crankshaft, connecting rod, and piston assembly disposed within said engine housing, said piston reciprocable within a cylinder bore to define a variable volume combustion chamber; an oil sump (in 4b, 31) disposed within said engine housing and containing oil; a camshaft (1) rotatably supported within said engine housing in timed

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driven relationship with said crankshaft, said camshaft further comprising: at least one cam lobe (8, 9) periodically engaging a valve; and at least one auxiliary valve actuator (24) axially spaced from said cam lobe, said auxiliary valve actuator engaging said valve in a first position (at 27) and not engaging said valve in a second position (at upper end of 21); and an oil pump in fluid communication with said oil sump, oil pressure generated by said oil pump acting upon at least at portion (25) of said camshaft to translate from said first position to said second position at high engine speeds, said oil pressure insufficient at low engine speeds to translate said portion of said camshaft from said first position to said second position; wherein said oil pump comprises an oil pump member (including 29) mounted on said camshaft, said oil pump member rotatable with said camshaft to generate said oil pressure; wherein said oil pump member comprises an impeller including a body portion, said impeller generating oil pressure upon rotation of said camshaft which acts upon said body portion; wherein said camshaft is rotatably supported at opposite ends thereof within first (4b) and second (4a) bearings carried by said engine housing, said first bearing in fluid communication with said pump member; wherein said camshaft further comprises a longitudinal bore therethrough, said bore fluidly communicating said first and second bearings with one another, said oil pump member pumping oil from said first bearing to said second bearing through said bore; wherein in said first camshaft position, said at least one auxiliary valve actuator engages said valve during a compression stroke of said piston to open said valve and vent pressure from said combustion chamber; wherein in said first camshaft position, said at least one auxiliary valve actuator

engages said valve during an expansion stroke of said piston to open said valve and allow entry of fluid into said combustion chamber.

Ikuma discloses the invention as recited above, however, fails to disclose the said camshaft being translatable axially between first and second positions.

The patent to Walters on the other hand, teaches that it is conventional in the engine valve control mechanism art, to utilize a control mechanism (See Fig. 1) to provide an axial movement of a camshaft (4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the camshaft axial movement control mechanism as taught by Walters in the Ikuma device, since the use thereof would provide a more flexible and adjustable engine valve actuation.

4. *Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikuma et al. (US Patent 6,250,271) in view of Walters (US Patent 6,474,281).*

Ikuma discloses an internal combustion engine, comprising: an engine housing containing an oil sump (in 4b, 31) having a volume of oil, said engine housing further including a cavity (in 21b) in fluid communication with said oil sump; a crankshaft, connecting rod, and piston assembly disposed within said engine housing, said piston reciprocable within a cylinder bore to define a variable volume combustion chamber; a camshaft (1) rotatably supported within said engine housing in timed driven relationship with said crankshaft, said camshaft further comprising: at least one cam lobe (8, 9) periodically engaging a valve; and at least one auxiliary valve actuator (24) axially spaced from said cam lobe, said auxiliary valve actuator engaging said valve in a first

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position (at 27) and not engaging said valve in a second position (at upper end of 21); an oil pump member (including 29) rotatably disposed within said cavity, oil pressure generated by said oil pump member acting upon said oil pump member at high engine speeds to translate a portion (25) of said camshaft from said first position to said second position; wherein said oil pump member comprises an impeller including a body portion and a plurality of impeller blades extending from said body portion; wherein said camshaft is rotatably supported at opposite ends thereof within first (4b) and second (4a) bearings carried by said engine housing, said first bearing in fluid communication with said cavity; wherein said camshaft further comprises a longitudinal bore therethrough, said bore fluidly communicating said first and second bearings with one another, said oil pump member pumping oil from said first bearing to said second bearing through said bore; wherein in said first camshaft position, said at least one auxiliary valve actuator engages said valve during one of a compression stroke and an expansion of said piston to open said valve and vent pressure from said combustion chamber.

Ikuma discloses the invention as recited above, however, fails to disclose the said camshaft being translatable axially between first and second positions.

The patent to Walters on the other hand, teaches that it is conventional in the engine valve control mechanism art, to utilize a control mechanism (See Fig. 1) to provide an axial movement of a camshaft (4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the camshaft axial movement control mechanism

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as taught by Walters in the Ikuma device, since the use thereof would provide a more flexible and adjustable engine valve actuation.

5. *Claims 17-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikuma et al. (US Patent 6,250,271) in view of Walters (US Patent 6,474,281).*

Ikuma discloses an internal combustion engine, comprising: an engine housing (2); a crankshaft, connecting rod, and piston assembly disposed within said engine housing, said piston reciprocable within a cylinder bore to define a variable volume combustion chamber; an oil sump (in 4b, 31) disposed within said engine housing and containing oil; a camshaft (1) rotatably supported within said engine housing in timed driven relationship with said crankshaft, said camshaft further comprising: at least one valve actuator (8, 9) periodically engaging a valve; and at least one auxiliary valve actuator (24) axially spaced from said cam lobe, said auxiliary valve actuator engaging said valve in a first position (at 27) and not engaging said valve in a second position (at upper end of 21); and means for translating a portion (25) of said camshaft between said first and second positions responsive to engine speeds; wherein said means for translating a portion of said camshaft comprises an oil pump member (29) connected to said camshaft and rotatable therewith; wherein said auxiliary valve actuator comprises a release member (See Figs 3-4) which, in said first position, engages and opens said valve during one of a compression stroke and a vacuum stroke of said piston to vent pressure from said combustion chamber.

Ikuma discloses the invention as recited above, however, fails to disclose the said camshaft being translatable axially between first and second positions.

The patent to Walters on the other hand, teaches that it is conventional in the engine valve control mechanism art, to utilize a control mechanism (See Fig. 1) to provide an axial movement of a camshaft (4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the camshaft axial movement control mechanism as taught by Walters in the Ikuma device, since the use thereof would provide a more flexible and adjustable engine valve actuation.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ching Chang whose telephone number is (571)272-4857. The examiner can normally be reached on M-Th, 7:00 AM -5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571)272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

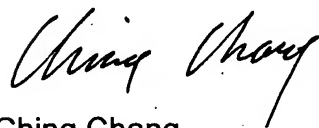
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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patent Examiner

A handwritten signature in black ink, appearing to read "Ching Chang", written in a cursive style.

Ching Chang